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Arrhythmias

RELATIONSHIP OF LOCALIZED SOURCES FOR HUMAN ATRIAL FIBRILLATION TO COMPLEX FRACTIONATED ELECTROGRAMS

ACC Moderated Poster Contributions
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Session Title: Arrhythmias: AF/SVT - Catheter and Surgical Ablation of Atrial Fibrillation
Abstract Category: 16. Arrhythmias: AF/SVT
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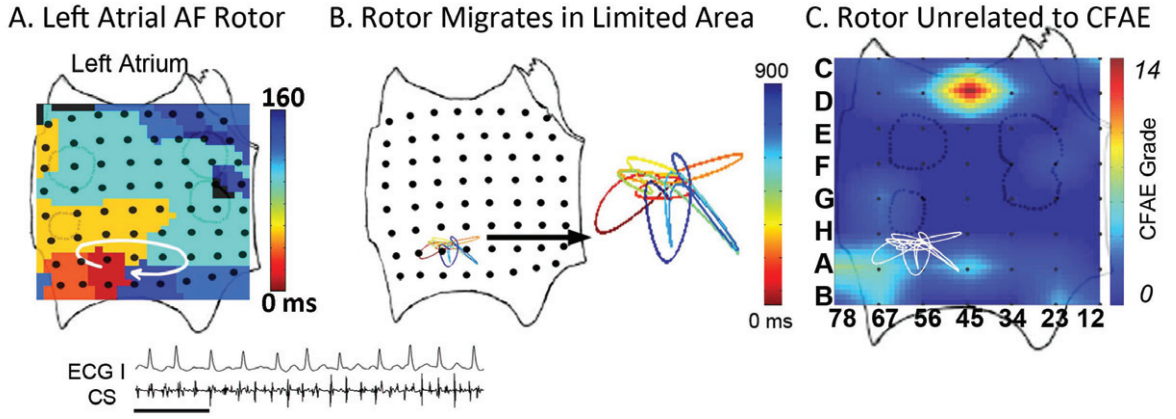
Background: It has recently been shown that localized electrical rotors or focal sources may maintain human atrial fibrillation (AF). We hypothesized that human AF sources are distinct from regions of complex fractionated electrograms (CFAE).

Methods: In 26 AF patients (63±10 years; 16 persistent), we recorded AF electrograms using 64 pole baskets in both atria, then applied the Hilbert Transform. Rotor cores were identified then their location was compared to maps of CFAE quantified using widely used automated algorithms. Ablation at sources (Focal Impulse and Rotor Modulation, FIRM) was applied to the endpoint of AF termination or 10% AF slowing.

Results: All patients exhibited AF sources (mean 2.1±0.7; 36 rotors/19 focal beats). Sources were localized, and migrated within areas that were similar for persistent (2.5±1.5 cm2) and paroxysmal (2.2±1.0 cm2; p=NS) AF. CFAE areas varied more for both groups (7.0±6.8 cm2 and 5.3 ±3.8 cm2, p=NS). AF sources were often distinct from CFAE (figure), but even in cases of overlap the proportion was low (13±12%). Fig shows (A) clockwise rotor in low left atrium during AF (early, red, meets late, blue; cycle 160 ms); (B) migration area 1.7 cm2; (C) Rotor location was unrelated to CFAE (warm colors in anterior left atrium). FIRM at AF sources terminated or slowed AF (by 16±7%) in 24/26 patients.



Conclusion: Localized AF rotors or focal sources show little overlap (often none) with regions of CFAE. Brief FIRM ablation at sources terminated or slowed AF in most patients.